

Abstract of the Invention

The invention provides genetically engineered, preselected DNA sequences and methods of using them to alter the nutritional content of plant seed. Methods of the invention are directed to increasing the weight percent of at least one amino acid essential to the diet of animals, or increasing the starch content, of a plant. One such method involves stably transforming a cell of a plant with an a preselected DNA sequence encoding an RNA molecule substantially identical or complementary to a messenger RNA (mRNA) encoding a plant seed storage protein, preferably a seed storage protein which is deficient in at least one amino acid essential to the diet of animals. An alternative method employs stably transforming cells with at least two preselected DNA sequences, one of which encodes an RNA molecule substantially identical or complementary to a messenger RNA (mRNA) encoding a plant seed storage protein, and the other preselected DNA molecule which encodes a preselected polypeptide. The transformed cells are used to generate fertile transgenic plants and seeds. Transgenic seeds are characterized by expression of the preselected DNA sequence which results in a substantial inhibition of production of a seed storage protein deficient in at least one amino acid essential to the diet of animals and/or an increase in the weight percent of an amino acid essential to the diet of animals.

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